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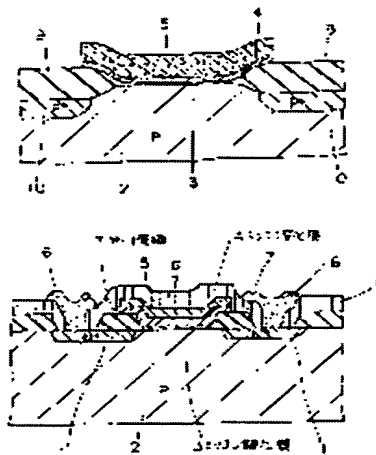
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(54) MANUFACTURE OF SEMICONDUCTOR DEVICE

(57)Abstract:

PURPOSE: To improve writing/erasing characteristics while improving yield and reliability of an MNOS semiconductor device by forming a nitride film by using cryooptical CVD process.

CONSTITUTION: MNOS memory cell according to the invention includes silicon oxide film 3 formed on a part of a P-type semiconductor substrate 2 where a channel is to be formed, the substrate 2 having an N+ type diffused layer 1 for providing source and drain. A silicon nitride film 4 is formed on the film 3 and a gate electrode 5 is further formed thereon. The element thus produced is isolated from other circuit elements by an oxide film 9 and a P+ type channel stopper 10. The silicon nitride film 4 is formed by the following method. The substrate 2 is heated within a reaction chamber to a temperature of 400° C or below and the reaction chamber is exhausted. Reaction gas consisting of disilane and ammonium is supplied into the reaction chamber and irradiated with light from a mercury lamp. The nitride film 4 is formed on the oxide film 3 by radical reaction and the nitride film 4 thus formed is lamp annealed. The writing/erasing characteristics can be improved in this manner.



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